

$^{124}\text{Te}(\alpha, n\gamma)$ 1983Ir02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	A. Hashizume	NDS 112, 1647 (2011)	1-Oct-2009

1983Ir02 presented the combined results of in-beam spectroscopic measurements (E_γ , I_γ , $\gamma\gamma$ coin, $\gamma(\theta)$, γ -pol) for following reactions:

The level scheme is that proposed by 1983Ir02. But on the basis of decay schemes of ^{127}Cs β^+ decay, (p,n γ) and (α ,2n γ), the levels at 1094 and 1410 keV are removed, and the levels at 308, 792, 1467 and 1534 keV are added by the evaluator.

$^{124}\text{Te}(\alpha, n\gamma)$	E=17.5 MeV, enriched target (91.7%)
$^{125}\text{Te}(\alpha, 2n\gamma)$	E=17 MeV, enriched target (88.4%)
$^{123}\text{Sb}(^7\text{Li}, 3n\gamma)$	E=24 MeV, enriched target (95.7%)

 ^{127}Xe Levels

E(level) [†]	J^π [‡]	E(level) [†]	J^π [‡]	E(level) [†]	J^π [‡]
0.0	1/2 ⁺	710.79 22	7/2 ⁺	1079.4 5	11/2 ⁺
124.68 9	3/2 ⁺	747.6 4		1107.9 4	
296.98 14	9/2 ⁻	792.2 [#] 5	(11/2 ⁻ , 13/2 ⁻)	1119.1 5	
308.8 [#] 5	(11/2 ⁻)	805.01 15	5/2 ⁺	1197.1 3	1/2 ⁺ , 3/2 ⁺
321.48 9	3/2 ⁺	845.9 5		1241.3 5	
342.38 14	7/2 ⁺	897.9 4	(9/2 ⁺)	1282.8 4	
375.52 9	5/2 ⁺	904.6 5	1/2 ⁺ , 3/2 ⁺ , 5/2 ⁺	1402.9 3	(3/2) ⁺
419.5 4	5/2 ⁻ , 7/2 ⁻ , 9/2 ⁻	937.6 4	(11/2) ⁺	1467.0 [@] 6	(13/2 ⁻ to 17/2 ⁻)
509.88 23	(3/2) ⁺	975.8 3	1/2, 3/2, 5/2 ⁺	1534.26 [@] 23	(3/2 ⁺)
530.33 17	7/2 ⁺	980.09 22		1541.3 5	(13/2 ⁺)
587.0 3	3/2 ⁺	1020.6 3		1621.9 5	(15/2 ⁺)
645.78 17	(9/2) ⁺	1071.5 4		1749.9 7	15/2 ⁺

[†] From a least-squares fit to E_γ 's.

[‡] From Adopted Levels.

[#] From (α ,2n γ).

[@] From ^{127}Cs β^+ decay and (p,n γ).

 $\gamma(^{127}\text{Xe})$

$E_i(\text{level})$	J_i^π	E_γ	I_γ [‡]	E_f	J_f^π	Mult. [#]	δ	Comments
124.68	3/2 ⁺	124.7 1		0.0	1/2 ⁺			
296.98	9/2 ⁻	172.3 1		124.68	3/2 ⁺			
308.8	(11/2 ⁻)	11.8 4		296.98	9/2 ⁻			
321.48	3/2 ⁺	196.8 3	16 3	124.68	3/2 ⁺			
		321.4 1	84 2	0.0	1/2 ⁺	D+Q	-0.9 4	
342.38	7/2 ⁺	217.7 1		124.68	3/2 ⁺			
375.52	5/2 ⁺	250.6 3	8 2	124.68	3/2 ⁺	D+Q	-2.06 25	
		375.6 1	92 2	0.0	1/2 ⁺	Q		δ : +0.04 12.
419.5	5/2 ⁻ , 7/2 ⁻ , 9/2 ⁻	77.1 3		342.38	7/2 ⁺			
509.88	(3/2) ⁺	188.4 3	10 3	321.48	3/2 ⁺			
		385.2 3	90 2	124.68	3/2 ⁺			
530.33	7/2 ⁺	154.8 3	6 2	375.52	5/2 ⁺			
		405.7 2	94 2	124.68	3/2 ⁺	Q		δ : +0.002 26.
587.0	3/2 ⁺	462.3 3		124.68	3/2 ⁺			
		587.2 5		0.0	1/2 ⁺			
645.78	(9/2) ⁺	303.4 1		342.38	7/2 ⁺			

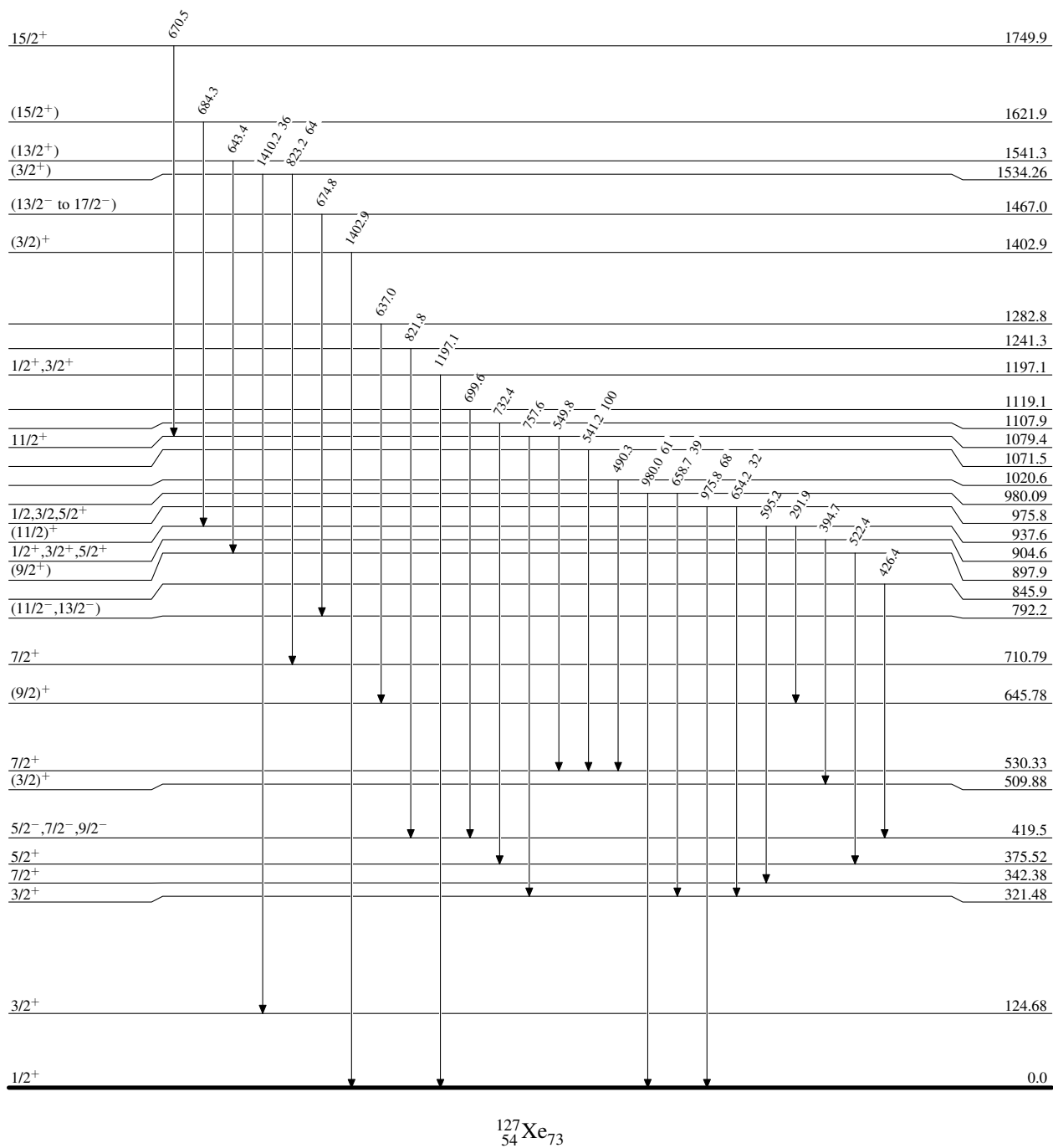
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$^{124}\text{Te}(\alpha, n\gamma)$ 1983Ir02 (continued)								
$\gamma(^{127}\text{Xe})$ (continued)								
$E_i(\text{level})$	J_i^π	E_γ	$I_\gamma^\ddagger$	E_f	J_f^π	Mult. [#]	δ	Comments
710.79	$7/2^+$	388.9 3	>99	321.48	$3/2^+$	Q		Mult.: $\Delta J=2$. δ : -0.07 5.
		585.5 5	<1	124.68	$3/2^+$			
747.6		426.1 3		321.48	$3/2^+$			
792.2	$(11/2^-, 13/2^-)$	483.4 [†] 2		308.8	$(11/2^-)$			
805.01	$5/2^+$	274.6 5		530.33	$7/2^+$			
		429.7 2		375.52	$5/2^+$			
		483.4 [†] 2		321.48	$3/2^+$	D+Q	$-0.45 +8-11$	Mult.: $\Delta J=1$.
		804.3 6		0.0	$1/2^+$			
845.9		426.4 3		419.5	$5/2^-, 7/2^-, 9/2^-$			
897.9	$(9/2^+)$	522.4 3		375.52	$5/2^+$			
904.6	$1/2^+, 3/2^+, 5/2^+$	394.7 4		509.88	$(3/2)^+$			
937.6	$(11/2)^+$	291.9 4		645.78	$(9/2)^+$			
		595.2 4		342.38	$7/2^+$			
975.8	$1/2, 3/2, 5/2^+$	654.2 5	32 12	321.48	$3/2^+$			
		975.8 3	68 8	0.0	$1/2^+$			
980.09		658.7 3	39 6	321.48	$3/2^+$			
		980.0 3	61 5	0.0	$1/2^+$			
1020.6		490.3 2		530.33	$7/2^+$			
1071.5		541.2 3	100	530.33	$7/2^+$			
1079.4	$11/2^+$	549.8 7		530.33	$7/2^+$			
		757.6 5		321.48	$3/2^+$			
1107.9		732.4 3		375.52	$5/2^+$			
1119.1		699.6 3		419.5	$5/2^-, 7/2^-, 9/2^-$			
1197.1	$1/2^+, 3/2^+$	1197.1 3		0.0	$1/2^+$			
1241.3		821.8 3		419.5	$5/2^-, 7/2^-, 9/2^-$			
1282.8		637.0 3		645.78	$(9/2)^+$			
1402.9	$(3/2)^+$	1402.9 3		0.0	$1/2^+$			
1467.0	$(13/2^- \text{ to } 17/2^-)$	674.8 3		792.2	$(11/2^-, 13/2^-)$			
1534.26	$(3/2^+)$	823.2 2	64 5	710.79	$7/2^+$			
		1410.2 3	36 5	124.68	$3/2^+$			
1541.3	$(13/2^+)$	643.4 4		897.9	$(9/2^+)$			
1621.9	$(15/2^+)$	684.3 4		937.6	$(11/2)^+$			
1749.9	$15/2^+$	670.5 5		1079.4	$11/2^+$			

[†] Doubly placed.[‡] % photon branching from each level.[#] From $\gamma(\theta)$ and γ -pol.

$^{124}\text{Te}(\alpha, n\gamma) \quad 1983\text{Ir02}$ Level Scheme

Intensities: % photon branching from each level



$^{124}\text{Te}(\alpha, n\gamma)$ 1983Ir02

Level Scheme (continued)

Intensities: % photon branching from each level

